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| APPLICATION NO.              | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|------------------------------|-------------|----------------------|---------------------|------------------|
| 10/763,803                   | 01/23/2004  | Jihua Wang           | 67,097-043          | 5003             |
| 26096                        | 7590        | 09/15/2008           | EXAMINER            |                  |
| CARLSON, GASKEY & OLDS, P.C. |             |                      | ZARE, SCOTT A       |                  |
| 400 WEST MAPLE ROAD          |             |                      |                     |                  |
| SUITE 350                    |             |                      | ART UNIT            | PAPER NUMBER     |
| BIRMINGHAM, MI 48009         |             |                      | 3687                |                  |
|                              |             |                      |                     |                  |
|                              |             |                      | MAIL DATE           | DELIVERY MODE    |
|                              |             |                      | 09/15/2008          | PAPER            |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/763,803             | WANG ET AL.         |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | SCOTT A. ZARE          | 3687                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 23 January 2004.

2a) This action is **FINAL**.                            2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-15 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-15 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 23 January 2004 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Requirement for Information***

Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application.

Because it is difficult to search for equations, the Examiner requests the source of origin of the equation

$$I = A \cdot (R - W) - \mu + \Delta_{\beta} \cdot \sigma$$

as stated in claim 3 of Applicants' claims filed January 23, 2004. In particular, the Examiner requests whether this equation is known to those of ordinary skill in the art or whether the equation has been derived by Applicants.

In response to this requirement, please provide the title, citation and copy of each publication that is a source used for the equation. In response to this requirement, please provide any known document that utilizes this equation or uses a significant part of the equation, or if derived, the derivation of said equation.

The fee and certification requirements of 37 C.F.R. §1.97 are waived for those documents submitted in reply to this requirement. This waiver extends only to those documents within the scope of this requirement under 37 C.F.R. §1.105 that are included in the applicant's first complete communication responding to this requirement. Any supplemental replies subsequent to the first communication responding to this requirement and any information disclosures beyond the scope of this

requirement under 37 C.F.R. §1.105 are subject to the fee and certification requirements of 37 C.F.R. §1.97.

In responding to those requirements that require copies of documents, where the document is a bound text or a single article over 50 pages, the requirement may be met by providing copies of those pages that provide the particular subject matter indicated in the requirement, or where such subject matter is not indicated, the subject matter found in applicant's disclosure.

The Applicant is reminded that the reply to this requirement must be made with candor and good faith under 37 C.F.R. §1.56. Where Applicants do not have or cannot readily obtain an item of required information, a statement that the item is unknown or cannot be readily obtained will be accepted as a complete response to the requirement for that item.

This requirement is subject to the provisions of 37 C.F.R. §§ 1.134, 1.135 and 1.136 and has a shortened statutory period of 2 months. EXTENSIONS OF THIS TIME PERIOD MAY BE GRANTED UNDER 37 CFR §1.136(a).

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-13 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject. Specifically, the claimed method recites purely mental steps. In order to fall within a statutory class, the process must be tied to another statutory class. To qualify as a §101 statutory process, the claim should be amended to positively recite the particular apparatus that accomplishes the method steps.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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Claims 1, 6, 12, 14, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Yang et al. (US 2001/0034673, referred hereinafter as “Yang”).

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In regard to claim 1, Yang discloses a method of optimizing rotatable inventory, comprising:

- selecting a desired customer service level (see paragraph 18, disclosing “a specified level of service to customer **16**”);
- obtaining at least one characteristic of part repair lead-time distribution (see paragraph 36, disclosing “a repair center scheduling function **88**”; see also paragraph 23, indicating factors to be included in modeling the supply chain includes “estimated cycle times associated with each stage of returns supply chain **28** and each repair operation associated with repair center **30**”);
- computing a proposed inventory level based on said at least one characteristic (see paragraph 23-24 and 35-36);
- determining a calculated customer service level corresponding to the proposed inventory level (see paragraph 33);
- comparing the calculated customer service level with the desired customer service level (see paragraph 33);
- selecting the proposed inventory level as an optimized inventory level *if* the calculated customer service level is within a selected convergence threshold with respect to the desired customer service level (see paragraph 33, disclosing “continually planning and re-planning in order to adjust to fluctuations in service parts demand and supply”).

Applicant(s) are reminded that optional or conditional elements (e.g., claim 1 which recites “*if* the calculated customer service level is within . . .”) do not narrow the

claims because they can always be omitted. *In re Johnston*, 435 F.3d 1381, 77 USPQ2d 1788, 1790 (Fed. Cir. 2006). “Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation.” MPEP §2106(II)(C) [Emphasis in original].

If a positive recitation is desired and if Applicant(s)’ original specification supports such an amendment, the Examiner respectfully suggests amending the claim to recite, e.g., “selecting the proposed inventory level as an optimized inventory level **when** the calculated customer service level is within a selected convergence threshold with respect to the desired customer service level.”

In regard to claims 6, Yang further discloses repeating the computing, determining, and comparing steps until the selecting step is executed. (See paragraph 33, disclosing “continually planning and re-planning in order to adjust to fluctuations in service parts demand and supply”).

In regard to claim 12, Yang further discloses wherein the method optimizes rotatable inventory for an asset having a plurality of individual parts, wherein the step of selecting the desired customer service level comprises selecting the desired customer service level for the individual parts, wherein the method further comprises:

- conducting the obtaining, computing, determining, comparing, and selecting steps to obtain the optimized inventory level for each of said plurality of parts (see paragraph 7);
- summing the optimized inventory level for each of said plurality of parts to obtain a total optimized inventory level (see paragraphs 34-37);
- calculating a total rotatable inventory cost from the total optimized inventory level (see paragraphs 34-37); and
- minimizing the total rotatable inventory cost (see paragraph 9).

In regard to claim 14, Yang similarly discloses a computer system for optimizing rotatable inventory, comprising a user interface and a processor that executes an algorithm to determine an optimized inventory level. (See rejection of claim 1.)

In regard to claim 15, Yang similarly discloses a method of maintaining an optimized rotatable inventory level, comprising determining an optimized inventory level. (See rejection of claim 1.)

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 7-11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang in view of Ettl et al. (US 5,946,662).

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In regard to claim 7, Yang discloses “participant may be obligated to provide a certain level of service to certain of its customers based on existing service agreements” and suggests that time is a factor (i.e., “the participant is ensured that . . . customers are able to obtain the service parts they need when they need them”), but fails to specifically disclose wherein the desired customer service level is a desired on-time delivery, and the calculated customer service level is a mean on-time delivery, wherein the desired on-time delivery and the mean on-time delivery are represented by a mean of a number of on-time delivery parts per time unit divided by a mean of arrivals per time unit.

Ettl discloses wherein the desired customer service level is a desired on-time delivery (see column 27, lines 1-5), and the calculated customer service level is a mean on-time delivery, wherein the desired on-time delivery and the mean on-time delivery are represented by a mean of a number of on-time delivery parts per time unit divided by a mean of arrivals per time unit. (See columns 25-27, expressed as a percentage “fill rate.”)

It would have been obvious to one of ordinary skill in the art of inventory management to measure customer service level as the mean of a number of on-time delivery parts per time unit divided by a mean of arrivals per time unit because such a percentage can be used (and are commonly used) in forming target contractual obligations.

In regard to claim 8, Yang fails to specifically disclose wherein the number of arrivals per time unit is a constant number, and wherein the mean of arrivals per time unit is set equal to the constant number.

Ettl discloses wherein the number of arrivals per time unit is a constant number. (See column 25, lines 40-45, disclosing demand is fixed for each day.)

It would have been obvious to one of ordinary skill in the art to modify Yang to specifically include wherein the number of arrivals per time unit is a constant number, and wherein the mean of arrivals per time unit is set equal to the constant number as taught by Ettl because "the equipment repair supply chain (of Yang) has clear parallelism with the manufacturing supply chain (of Ettl) where the repair items correspond to products and components correspond to materials." (See Huang et al., US 5,953,707, column 14-15.)

In regard to claim 9, Ettl further discloses wherein a number of arrivals per time unit is randomly variable. (See column 25, lines 40-45, disclosing demand is fixed for each day.)

It would have been obvious to one of ordinary skill in the art to modify Yang to specifically include wherein the number of arrivals per time unit is randomly variable, taught by Ettl because "the equipment repair supply chain (of Yang) has clear parallelism with the manufacturing supply chain (of Ettl) where the repair items correspond to products and components correspond to materials." (See Huang et al., US 5,953,707, column 14-15.)

In regard to claim 10, Yang fails to disclose wherein the method further comprises:

- obtaining an arrival value having a distribution G and an inventory value having a distribution  $\Phi$ ;
- obtaining a distribution of the calculated customer service level based from the distributions G and  $\Phi$ ;
- conducting the step of determining the calculated customer service level based on the distribution of the calculated customer service level.

Ettl discloses:

- obtaining an arrival value having a distribution G and an inventory value having a distribution  $\Phi$  (see column 25, under the heading "populate demand");
- obtaining a distribution of the calculated customer service level based from the distributions G and  $\Phi$  (see columns 25-26);

- conducting the step of the determining the calculated customer service level based on the distribution of the calculated customer service level (see column 27.)

It would have been obvious to one of ordinary skill in the art to modify Yang to include obtaining an arrival value, inventory value, calculated a distribution of the customer service level based on the distributions of the arrival value and inventory value to “optimize inventory” (See Ettl, column 25, lines 12-15.)

In regard to claim 11, Ettl further discloses wherein the method further comprises approximating the randomly variable number of arrivals per time unit with a constant number of arrivals per time unit. (See column 25, lines 40-45, disclosing demand is fixed for each day.)

It would have been obvious to one of ordinary skill in the art to modify Yang to specifically include wherein the number of arrivals per time unit is randomly variable, taught by Ettl to simply the model. (See Ettl, column 25.)

In regard to claim 13, Yang does not disclose wherein the minimizing step is conducted via a constrained optimization process.

Ettl discloses wherein the minimizing step is conducted via a constrained optimization process. (See column 2, lines 30-50.)

It would have been obvious to use a constrained optimization process as taught by Ettl within the method disclosed by Yang because such a technique would allow for

"the user [to] specif[y] end-customer service levels and then [perform an analysis] which finds the inventory policy which minimizes inventory investment and meets the specified service levels. (See Ettl, column 2.)

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Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (US 2001/0034673, referred hereinafter as "Yang) in view of Examiner's Official Notice.

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In regard to claim 2, although Yang suggests that discloses the use of a part repair lead-time distribution , Yang fails to discloses specifically wherein said at least one characteristic is a mean  $\mu$  and a variance  $\sigma$  of the part repair lead-time distribution.

Examiner takes Official Notice that it is notoriously old and well-known in the art of inventory optimization to use common statistical characterizations such as a mean and a variance in evaluating variable data to be used to calculate optimal inventory.

In regard to claims 5, Yang further discloses repeating the computing, determining, and comparing steps until the selecting step is executed. (See paragraph 33, disclosing "continually planning and re-planning in order to adjust to fluctuations in service parts demand and supply").

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Huang et al., US 5,953,707 (Decision support system for the management of an agile supply chain)

Freel et al., US 2004/0024661 (System and methods for inventory management)

Harris, US 7,370,001 (Method and system of forecasting unscheduled component demand)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SCOTT A. ZARE whose telephone number is (571)270-3266. The examiner can normally be reached on Monday - Friday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Gart can be reached on (571) 272-3955. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew S Gart/  
Supervisory Patent Examiner, Art  
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Scott A Zare  
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September 11, 2008